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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,600	10/12/2001	Wolf-Dietrich Weber	02998.P018	2730

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EXAMINER

CHACE, CHRISTIAN

ART UNIT PAPER NUMBER

2187

DATE MAILED: 11/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/977,600

Applicant(s)

WEBER, WOLF-DIETRICH

Examiner

Christian P. Chace

Art Unit

2187

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/27/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

This Office action has been issued in response to amendment filed 27 September 2004. Claims 1-14 are pending. Applicants' arguments have been carefully and respectfully considered, and some are persuasive, while others are not. Accordingly, rejections pertaining to the persuasive arguments have been removed, while rejections pertaining to arguments that are not persuasive have been repeated. Accordingly, this action has been made FINAL.

Information Disclosure Statement

IDS submitted 27 September 2004 has been considered by examiner. A signed and initialed copy is attached hereto.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Strongin et al (US Patent #6,510,497).

With respect to independent claim 1, a method for scheduling access to a device is disclosed in the title.

Tracking a current state of the device is disclosed in column 11, lines 45-50.

This is also disclosed in column 18, lines 22-35 as “determining a status.”

Tracking a count of a number of requests which require a “particular” state is disclosed in column 11, lines 55-60, as the number of requests issued and/or amount of time elapsed. Both “particular states” would inherently require a count of some sort. A count is one or more, and the particular state is the bus direction, as is further explained in column 18, lines 22-35.

Scheduling requests to a device using the current state of the device, the count of the number of requests that have already been scheduled using the current state, a switch point (number of pending operations) indicating when to switch state, wherein after the count reaches the switch point and there are incoming requests having an alternate state to the current state (a different bus direction or a different open bank of DRAM) of the device, switching the state of the device to process incoming requests is disclosed in column 12, lines 20-35. Also see column 18, lines 22-35, which discusses scheduling a number of “tracked” requests based on the bus direction, or “device state.” The “switch point” is when the pending requests consistent with the memory bus direction are issued, and the bus direction reverses, or switches, to allow the scheduled requests that were previously inconsistent with the previous bus direction to now issue.

With respect to claims 2 and 7, “configuring” the switch point is disclosed in column 12, lines 22-33, which is the number of pending requests. As this number changes, the switch point is “re-configured.”

With respect to claims 3 and 12, the switch point being adjustable by software is disclosed in column 15, lines 5-10.

With respect to claims 4 and 9, the switch point being “dynamically” configurable is discussed supra with respect to claims 2 and 7. “Dynamic” simply means it changes.

With respect to claims 5 and 11, the device being a DRAM is disclosed in column 13, line 8, for example. A scheduler type being selected from the group consisting of a DRAM bus turnaround scheduling (consistent with the direction of a bus), DRAM page scheduling (targeted to one or more open pages in memory), and DRAM physical bank switching (identifying one or more closed pages, such as banks, in column 13, lines 50-67, for example) is disclosed in column 14, lines 20-60.

With respect to independent claim 6, a bus scheduler is disclosed in column 17, line 4 as an arbiter configured to arbitrate between memory requests according to a bus direction.

An input configured to receive at least one incoming request, each request indicating a bus direction is disclosed in column 18, lines 22-35, which discloses pending memory access commands, which are scheduled based on their consistency or lack thereof with the memory bus direction. Inherently, there must be an “input configured to receive” these requests for the system to operate – a computer must be told what to do.

A switch point is disclosed in column 18, lines 22-35 in that the “switch point” is when the first set of pending requests are issued and the bus direction switches to

accommodate the second set of pending request that were previously inconsistent with that bus direction.

An indicator of a current bus direction is disclosed in column 18, lines 22-35 and in lines 55-60, which discusses determining the direction of the bus. Inherently, if the bus direction is determined, it is indicated.

A count of requests processed through the current bus direction is disclosed in column 18, lines 22-35 as the “one or more” pending access requests. “One or more” indicates a number, which is a count.

Logic configured to switch the direction of the bus to process incoming requests wherein after the count reaches the switch point and there are incoming requests having the direction opposite to the current direction of the device bus, switching the direction of the device bus is disclosed in column 18, lines 22-35, which discloses issuing the requests consistent with a bus direction ahead of, or before, the requests inconsistent with the bus direction. (The logic for implementing this method is disclosed in column 17 and 18 in claims 1-12, for example).

With respect to independent claim 8, a scheduler is disclosed as a memory arbiter in column 17, line 4.

A switch point is disclosed as discussed supra with respect to claims 1 and 6.

A current device state is disclosed as a bus direction and/or a page status in column 18, lines 22-35.

A count is disclosed as “one or more” in column 18, line 30.

Logic configured to determine an updated device state using the switch point and count such that when the count crosses a threshold of the switch point, the device state is changed is disclosed in column 18, lines 22-35, where memory accesses are scheduled based on the bus direction and the page status.

Scheduling the access requests to the device using the updated device state is disclosed in column 18, lines 22-35, which discloses that after the pending requests that are consistent with the device state are issued, the access requests are then issued ("ahead of") that are inconsistent with the previous device state.

With respect to claim 10, the device comprising a bus and the device state comprising a bus direction, said scheduling being dependent upon the bus direction is disclosed in column 11, lines 64-65.

With respect to claim 13, the device comprising a DRAM with multiple pages and the device state comprising the identity of at least one open page, said scheduling being dependent upon the at least one page opened is disclosed in column 11, lines 5-10.

With respect to claim 14, the device comprising a DRAM with multiple physical banks and the device state comprising the last accessed physical bank, said scheduling dependent upon the last accessed physical bank is disclosed in column 15, lines 29-34.

Response to Arguments

With respect to applicants' argument that examiner may have made an error in the provisional double-patenting rejection of the instant application with respect to case 09.997,510, examiner agrees, and respectfully apologizes for any inconvenience this may have caused. The proper case is 09/977,510. However, examiner has

reconsidered his position, and removed the provisional rejection of double-patenting anyway. Examiner also wishes to note that he does not recall receiving the voicemail referred to in the instant remarks from applicants' representative. Examiner takes great pride in that he returns telephone inquiries as soon as possible, and regrets that he did not have an opportunity to speak with applicants' representative about this issue prior to the instant submission.

With respect to the provisional double-patenting rejection of the instant claims with respect to application 10/418,370, examiner has reconsidered his position and removed the rejection. Examiner also wishes to note, for applicants' own edification and to clarify the record, that applicants did not submit a terminal disclaimer in this instant case, rather, it was submitted for case 10/418,370.

MPEP 804.02 recites:

"(Fed. Cir. 1991). The court indicated that the "filing of a terminal disclaimer simply serves the statutory function of removing the rejection of double patenting, and raises neither a presumption nor estoppel on the merits of the rejection."

A terminal disclaimer filed to obviate a double patenting rejection is effective only with respect to the application identified in the disclaimer, unless by its terms it extends to continuing applications. If an appropriate double patenting rejection of the nonstatutory type is made in two or more pending applications, an appropriate terminal disclaimer must be filed in each application."

With respect to applicants' argument that a provisional double-patenting rejection would no longer apply to instant claims 1, 6, and 8 with respect to case 10/409,806 in

light of preliminary amendment that was filed in that case 7 July 2003 which canceled claim 1, examiner agrees, and has removed the rejection.

With respect to applicants' argument that a terminal disclaimer has been filed in the instant case to overcome the double-patenting rejection of claims 1, 6, and 8 in light of case 09/802,405, examiner has received the terminal disclaimer, and it has been entered into the instant case. Accordingly, this rejection has been removed.

With respect to applicants' arguments traversing the rejection of claims 1-14 under 35 USC 102(e) as being anticipated by Weber et al, examiner has removed the rejection, thereby rendering the arguments moot.

With respect to applicants' argument that Strongin (cited supra) does not disclose a method comprising tracking a count of a number of requests which require a particular state, examiner respectfully disagrees. Specifically, applicants assert that the memory status being determined based on previous memory access activity such as previously issued memory requests or elapsed time since issued requests is not the same as tracking a count of a number of requests. Examiner respectfully disagrees. Applicants do not discuss anywhere in the specification, a more specific definition or process for "tracking." Specifically, there is no mention of WHEN the access requests are tracked. Accordingly, examiner maintains that the claim language, as it stands instantly, is, indeed, anticipated by Strongin, as discussed supra. In addition, examiner has attempted to clarify his position, as discussed supra in the rejection of the claims.

With respect to applicants' argument that nothing is disclosed or suggested in Strongin in regards to tracking a count of a number of requests, examiner respectfully

disagrees. Even assuming, *arguendo*, that the response put forth supra is not persuasive, examiner would refer applicants to column 18, line 23, which recites, “tracking system memory status,” and then lines 55-60, wherein, “the status further includes determining the direction of at least one bus...” In line 30, “one or more of the pending memory access requests” are forwarded to the memory based on the bus direction. The “one or more” is the “count.” The particular state required is the bus direction being consistent, and the count is the number of access requests pending consistent with that state.

Returning to examiner’s rejection in the previous Office action, applicants argue that the states examiner originally cited would not inherently require a count of some sort, that such a limitation cannot be implicitly read into the reference at issue, and that Strongin does not explicitly state the tracking a count of the number of requests. Again, examiner respectfully disagrees. The particular states are previous memory requests issued, and elapsed time. In order to know whether a request is “previous,” one has to know whether there was at least one request issued prior to the current one. That one or more” is a “count.” In order to know what an elapsed time since requests issued, one has to count clock cycles in some manner – time cannot be measured without counting.

With respect to applicants’ argument that Strongin fails to disclose that requests which require “particular states” are being tracked, that there is no mention of particular states, and that a tracking unit receiving information about the state of system memory in general is not enough to anticipate the limitation at issue, examiner respectfully disagrees. As discussed supra, column 18, line 23, recites, “tracking system memory

status,” and then lines 55-60, wherein, “the status further includes determining the direction of at least one bus...” In line 30, “one or more of the pending memory access requests” are forwarded to the memory based on the bus direction. That one or more is the “count.” The particular state required is the bus direction being consistent, and the count is the number of access requests pending consistent with that state.

With respect to applicants’ argument that they believe that the references cited by Strongin in regards to independent claims 6 and 8 were by mistake, examiner respectfully disagrees, and has elaborated for applicants in the rejection supra. Examiner believes that the elaborated rejection supra addresses applicants’ arguments with respect to independent claims 6 and 8.

With respect to applicants’ argument that Strongin only discusses memory operations, which require that the bus associated with the open pages be reversed in direction does not anticipate logic that can switch the direction of a bus as taught in claim 6. Examiner respectfully submits that the bus being reversed in direction as taught by Strongin does, indeed, disclose and anticipate logic that can switch the direction of a bus as taught in claim 6, and elaborated further supra with respect to the rejection of same. Reversing direction of a bus and switching direction of a bus are, indeed, the same thing.

With respect to applicants’ argument that Strongin does not anticipate the claim language of independent claim 8, examiner believes that the elaborated rejection put forth supra addresses applicants’ arguments with respect to same.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian P. Chace whose telephone number is 571.272.4190. The examiner can normally be reached on MAXI FLEX.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on 571.272.4201. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'C.P. Chace', followed by a horizontal line.

Christian P. Chace
Examiner
Art Unit 2187